



Complete Summary

GUIDELINE TITLE

Surgery for thoracic outlet syndrome (TOS).

BIBLIOGRAPHIC SOURCE(S)

Washington State Department of Labor and Industries. Surgery for thoracic outlet syndrome (TOS). Olympia (WA): Washington State Department of Labor and Industries; 2002 Aug. 2 p.

COMPLETE SUMMARY CONTENT

SCOPE

METHODOLOGY - including Rating Scheme and Cost Analysis

RECOMMENDATIONS

EVIDENCE SUPPORTING THE RECOMMENDATIONS

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

QUALIFYING STATEMENTS

IMPLEMENTATION OF THE GUIDELINE

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT

CATEGORIES

IDENTIFYING INFORMATION AND AVAILABILITY

SCOPE

DISEASE/CONDITION(S)

Thoracic outlet syndrome (TOS)

GUIDELINE CATEGORY

Diagnosis

Evaluation

Treatment

CLINICAL SPECIALTY

Neurological Surgery

Neurology

Orthopedic Surgery

INTENDED USERS

Health Care Providers

Health Plans

Physicians
Utilization Management

GUIDELINE OBJECTIVE(S)

To present indications for surgery for thoracic outlet syndrome (TOS) in the injured worker

TARGET POPULATION

The injured worker with thoracic outlet syndrome

INTERVENTIONS AND PRACTICES CONSIDERED

Evaluation (Criteria for Surgery for Thoracic Outlet Syndrome)

1. Evaluation of subjective clinical findings (e.g., pain, swelling or heaviness, decreased temperature or color change, numbness or paresthesias in the ulnar nerve distribution)
2. Evaluation of objective clinical findings (e.g. pallor or coolness, digital gangrene, swelling of the arm, venous engorgement, cyanosis)
3. Evaluation of electrodiagnostic (electromyographic) abnormalities including reduced amplitude of median motor response, reduced amplitude of ulnar sensory response, and denervation in muscles innervated by lower trunk of the brachial plexus
4. Imaging studies (arteriogram, venogram)

Treatment

Surgery for thoracic outlet syndrome

MAJOR OUTCOMES CONSIDERED

Long-term patient outcomes after surgery for thoracic outlet syndrome compared with medical management of the syndrome

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

The guideline developer performed literature searches of the U.S. National Library of Medicine's Medline database to identify data related to the injured worker population.

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Not stated

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Not applicable

METHODS USED TO ANALYZE THE EVIDENCE

Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not applicable

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

Consensus development has generally taken place between the permanent members of the subcommittee (orthopedic surgeon, physiatrist, occupational medicine physician, neurologist, neurosurgeon) and ad hoc invited physicians who are clinical experts in the topic to be addressed. One hallmark of this discussion is that, since few of the guidelines being discussed have a scientific basis, disagreement on specific points is common. Following the initial meeting on each guideline, subsequent meetings are only attended by permanent members unless information gathering from invited physicians is not complete.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

External Peer Review
Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Following input from community-based practicing physicians, the guideline was further refined.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Surgery for Thoracic Outlet Syndrome (TOS)

TYPE OF TOS	SUBJECTIVE		OBJECTIVE		IMAGING
Vascular TOS Arterial	At least <u>three</u> of the following must be present in the affected upper extremity: A. Pain B. Swelling or heaviness C. Decreased temperature or change in color D. Paresthesias in the ulnar nerve distribution	AND	At least <u>one</u> of the following: A. Pallor or coolness B. Gangrene of the digits in advanced cases	AND	C. Abnormal arteriogram
Vascular TOS Venous	At least <u>three</u> of the following must be present in the affected upper extremity: A. Pain B. Swelling or heaviness C. Decreased temperature or change in color D. Paresthesias in the ulnar nerve distribution	AND	At least two of the following: A. Swelling of the arm B. Venous engorgement C. Cyanosis	AND	D. Abnormal venogram

TYPE OF TOS	SUBJECTIVE		OBJECTIVE		IMAGING
Neurogenic TOS	<p>In the affected upper extremity:</p> <p>A. Pain</p> <p>and</p> <p>B. Numbness or paresthesia in the ulnar nerve distribution</p>	AND	<p>In the affected upper extremity, <u>all of the</u> following electrodiagnostic abnormalities must be found:</p> <p>A. Reduced amplitude median motor response</p> <p>and</p> <p>B. Reduced amplitude ulnar sensory response</p> <p>and</p> <p>C. Denervation in muscles innervated by lower trunk of the brachial plexus</p>		

1. The clinical findings in thoracic outlet syndrome (TOS) may be similar to those in carpal tunnel syndrome, ulnar neuropathy, or cervical radiculopathy. A physician should consider these alternative diagnoses before requesting TOS surgery.
2. Most patients with TOS have cervical ribs.
3. The Department of Labor and Industries has recently concluded a retrospective study of outcomes of thoracic outlet surgery on patients with Labor and Industries claims. The results indicate that long-term outcomes after TOS surgery are worse than outcomes with medical management of TOS.

Criteria for the Electrodiagnostic Diagnosis of Unilateral Neurogenic Thoracic Outlet Syndrome (TOS)

All 3 of the following criteria must be found in the affected limb:

1. Amplitude of median motor response is reduced.

And

2. Amplitude of ulnar sensory response is reduced.

And

3. Needle exam shows denervation in muscles innervated by lower trunk of brachial plexus.

Details Regarding the Above Noted Criteria:

Criterion #1

Using standard surface electrodes with active pick up over the abductor pollicis brevis, the amplitude of the median motor response on the affected side should be less than 50% of that obtained on the unaffected side.

Criterion #2

Using standard ring electrodes on the fifth digit, the ulnar sensory amplitude on the affected side should be less than 60% of the amplitude on the unaffected side.

Criterion #3

- a. Muscles innervated by the lower trunk of the brachial plexus include the abductor pollicis brevis, pronator quadratus, flexor pollicis longus, first dorsal interosseous, abductor digiti minimi, flexor carpi ulnaris, extensor pollicis brevis, and extensor indicis.
- b. Electromyographic (EMG) abnormalities in TOS are most commonly seen in median and ulnar innervated intrinsic muscles of the hand -- especially the abductor pollicis brevis.
- c. Positive waves and fibrillations may be found, but chronic denervation changes are more common -- that is, increased motor unit amplitude, increased motor unit duration, and decreased recruitment with rapid firing of motor units are activated.

Notes

The electromyographer should rule out neuropathic conditions that might mimic TOS, specifically cervical radiculopathy, carpal tunnel syndrome, ulnar neuropathy, and polyneuropathy.

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is not specifically stated for each recommendation.

The recommendations were developed by combining pertinent evidence from the medical literature with the opinions of clinical expert consultants and community-based practicing physicians. Because of a paucity of specific evidence related to the injured worker population, the guideline is more heavily based on expert opinion.

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

- The surgical guidelines are meant to increase the proportion of surgical requests authorized for workers who truly require surgery and to decrease the proportion of such authorizations among workers who do not fall within the guideline.
- Appropriate utilization of surgery for thoracic outlet syndrome (TOS) is important because results from a retrospective study conducted by the Department of Labor and Industries revealed that long-term outcomes after TOS surgery are worse than outcomes with medical management of TOS.

POTENTIAL HARMS

The Department of Labor and Industries has recently concluded a retrospective study of outcomes of thoracic outlet surgery (TOS) on patients with Labor and Industries claims. The results indicate that long-term outcomes after TOS surgery are worse than outcomes with medical management of TOS.

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

- The Office of the Medical Director works closely with the provider community to develop medical treatment guidelines on a wide range of topics relevant to injured workers. Guidelines cover areas such as lumbar fusion, indications for lumbar magnetic resonance imaging (MRI), and the prescribing of controlled substances. Although doctors are expected to be familiar with the guidelines and follow the recommendations, the department also understands that guidelines are not hard-and-fast rules. Good medical judgment is important in deciding how to use and interpret this information.
- The guideline is meant to be a gold standard for the majority of requests, but for the minority of workers who appear to fall outside of the guideline and whose complexity of clinical findings exceeds the specificity of the guideline, a further review by a specialty-matched physician is conducted.

- The guideline-setting process will be iterative; that is, although initial guidelines may be quite liberally constructed, subsequent tightening of the guideline would occur as other national guidelines are set, or other scientific evidence (e.g., from outcomes research) becomes available. This iterative process stands in contrast to the method in some states of placing guidelines in regulation. Although such regulation could aid in the dissemination and quality oversight of guidelines, flexibility in creating updated guidelines might be limited.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

All of the surgical guidelines established by the Department of Labor and Industries in collaboration with the Washington State Medical Association (WSMA) have been implemented in the context of the Utilization Review (UR) program (complete details regarding the Utilization Review program can be found on the [Washington State Department of Labor and Industries Web site](#)). It has been critical in contract negotiations with UR vendors to specify that the vendor is willing to substitute WSMA-generated guidelines for less specific standards already in use by the company. The Department of Labor and Industries initiated an outpatient UR program, and this has allowed full implementation of guidelines related to outpatient procedures (e.g., carpal tunnel surgery, magnetic resonance imagings [MRIs]). The scheduled drug use guideline has been used internally, but has not been formally implemented in a UR program.

The intention of the joint the Department of Labor and Industries and WSMA Medical Guidelines Subcommittee was to develop treatment guidelines that would be implemented in a nonadversarial way. The subcommittee tried to distinguish between clear-cut indications for procedures and indications that were questionable. The expectation was that when surgery was requested for a patient with clear-cut indications, the request would be approved by nurse reviewers. However, if such clear-cut indications were not present, the request would not be automatically denied. Instead, it would be referred to a physician consultant who would review the patient's file, discuss the case with the requesting surgeon, and make recommendations to the claims manager.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Getting Better

IOM DOMAIN

Effectiveness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Washington State Department of Labor and Industries. Surgery for thoracic outlet syndrome (TOS). Olympia (WA): Washington State Department of Labor and Industries; 2002 Aug. 2 p.

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

1995 Apr (revised 1999 Jun; republished 2002 Aug)

GUIDELINE DEVELOPER(S)

Washington State Department of Labor and Industries - State/Local Government Agency [U.S.]

SOURCE(S) OF FUNDING

Washington State Department of Labor and Industries

GUIDELINE COMMITTEE

Washington State Department of Labor and Industries (L&I), Washington State Medical Association (WSMA) Industrial Insurance Advisory Section of the Interspecialty Council

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Medical Director, Washington State Department of Labor and Industries (L&I): Gary Franklin, MD

The individual names of the Washington State Medical Association (WSMA) Industrial Insurance Advisory Committee are not provided in the original guideline document.

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previous version: Washington State Department of Labor and Industries. Surgery for thoracic outlet syndrome (TOS). Olympia (WA): Washington State Department of Labor and Industries; 1999 Jun. 2 p.

GUIDELINE AVAILABILITY

Electronic copies: Available from the [Washington State Department of Labor and Industries Web site](#).

Print copies: L&I Warehouse, Department of Labor and Industries, P.O. Box 44843, Olympia, Washington 98504-4843.

AVAILABILITY OF COMPANION DOCUMENTS

This guideline is one of 16 guidelines published in the following monograph:

- Medical treatment guidelines. Olympia (WA): Washington State Department of Labor and Industries, 2002 Aug. 109 p.

Also included in this monograph:

- Grannemann TW (editor). Review, regulate, or reform? What works to control workers' compensation medical costs? In: Medical treatment guidelines. Olympia (WA): Washington State Department of Labor and Industries, 1994 (republished 2002). p. 3-19.

Electronic copies: Available from the [Washington State Department of Labor and Industries Web site](#).

The following is also available:

- Washington State Department of Labor and Industries. Utilization Review Program. New UR Firm. (Provider Bulletin: PB 02-04). Olympia (WA): Washington State Department of Labor and Industries; 2002 Apr. 12 p.

Print copies are available from the L&I Warehouse, Department of Labor and Industries, P.O. Box 44843, Olympia, Washington 98504-4843.

PATIENT RESOURCES

None available

NGC STATUS

This summary was completed by ECRI on July 24, 1999. The information was verified by the guideline developer on October 17, 1999. This summary was updated by ECRI on May 27, 2004. The information was verified by the guideline developer on June 14, 2004.

COPYRIGHT STATEMENT

This NGC summary is based on the original guideline, which is subject to the guideline developer's copyright restrictions.

© 1998-2004 National Guideline Clearinghouse

Date Modified: 11/8/2004

The logo for FIRSTGOV, with "FIRST" in blue and "GOV" in red, and a small red star above the "I".

